Water Quality Standards Regulation
James River Chlorophyll Proposed Criteria & Modeled Scenario Outputs
Regulatory Advisory Panel (RAP) Meeting
October 31, 2018 – DEQ Piedmont Regional Office
10:00 AM – 12:00 PM

Agenda

- Introductions; Opening Remarks – John Kennedy, DEQ-Office of Ecology, Director
- VIMS James River Modeling: Refinement and Scenario Runs – Dr. Jian Shen, VIMS
- James River chlorophyll criteria attainment results of eutrophication modeling results – Dr. Tish Robertson, DEQ-Water Quality Standards
- Discussion

Advisory Panel Members and Alternates Present:
Chesapeake Bay Foundation (CBF): Joe Wood
City of Hopewell; Richard Thompson
City of Richmond: Robert Steidel, Grace LeRose
Dominion Energy: John Pickelhaupt
Environmental Protection Agency Chesapeake Bay Program Office (EPA CBPO): Lew Linker, Lucinda Powers
Environmental Protection Agency-Region 3: Cheryl Atkinson, Evelyn MacKnight
Hampton Roads Sanitation District (HRSD): Jim Pletl
James River Association (JRA): Jamie Brunkow
Virginia American Water: Christian Volk
VA Association of Municipal Wastewater Agencies (VAMWA): Ted Henefin, Chris Pomeroy, AquaLaw
VA Manufacturer's Association (VMA): Andrew Parker, Ellen Snyder
VA Dept. Game & Inland Fisheries: Ernie Aschenbach
VA Dept. Of Health (VDH): Margaret Smigo

Invited Science Advisory Panel (SAP) Members Present
Clifton Bell (Brown & Caldwell)
Will Hunley (Hampton Roads Sanitation District)
Jian Shen (VIMS)

Dept. of Environmental Quality Staff Present
Jutta Schneider, John Kennedy, David Whitehurst, Tish Robertson, Allan Brockenbrough, Matt Richardson, Brandon Bull

Observers
Rosemary Green: City of Richmond
Anna Killius, Ben Watson: JRA
Hannah Somers (unknown affiliation)
Andrea Wortzel: Troutman Sanders

The Regulatory Advisory Panel (RAP) for the James River chlorophyll 'a' water quality standards rulemaking met for the seventh time on 10/31/2018. John Kennedy, Office of Ecology Director, greeted the attendees and made introductions. He stated the purpose of the meeting was to present the updated

calibration/verification and response to comments on the VIMS' water quality model, results of modeling scenarios, water quality assessments utilizing the proposed criteria for each of the scenarios, and the implications of the proposed criteria on waste load allocations (WLAs) and the regulated community.

Dr. Jian Shen (VIMS) then presented a summary of the results of the updated model calibration and verification. The presentation "*James River Water Quality Model Refinement and Scenario Runs*" may be accessed through the below web link:
https://www.deq.virginia.gov/Programs/Water/WaterQualityInformationTMDLs/WaterQualityStandards/RulemakingInfo.aspx
In summary, the major points made in Dr. Shen's presentation were:

1. Model sensitivity tests indicate that a slight change of a model kinetic parameter will only result in minor changes of model calibration.
2. Although different calibrations may result in differences in model-data comparison, it will not affect criteria assessment based on the CBP's method to correct observations based on differences between baseline and reduction. It accounts for model uncertainty due to mismatch between the model and observations.
3. The use of a time varying Carbon to Chl-a ratio has large impact on Chl-a reduction compared to use of a fixed Carbon to Chl-a ratio.
4. Calibration and subsequent verification indicate the model is robust and capable of conducting management scenarios.

Dr. Tish Robertson then presented water quality assessments for each of the model scenarios utilizing the proposed chlorophyll 'a' criteria and proposed assessment methodology. She reviewed the proposed criteria which consist of 2 components: 1) a seasonal mean for each of the five segments of the tidal James River (Spring = March – May, and Summer = July – September) and; 2) short duration criteria for all segments (except for JMSOH) during just the summer season (July – September).

Assessments were done for the following modeled scenario outputs (All scenarios include Virginia's Watershed Implementation Plan II (WIP II) level-of-effort for nonpoint source controls):

- VAMWA B: 2017 Watershed General Permit Waste Load Allocations.
- VAMWA B+: Same TN loads as VAMWA B; tests sensitivity to TP reductions
- VAMWA B/D: Seasonal Hybrid. Annual TN and TP loads are same as VAMWA B. Summer loads are same as VAMWA D (above fall line and upper estuary) and VAMWA C (lower estuary).
- VAMWA C: Intermediate scenario; slightly more stringent than Scenario B.
- VAMWA D: Intermediate scenario; slightly more stringent than Scenario C.
- VAMWA E: Watershed Implementation Plan II Level of Effort, estimated to achieve existing James River chlorophyll criteria using the CBP Watershed Model (Phase 5.3.2) and Time Variable Sediment Transport Water Quality Model.

The following bullets summarize the assessment results of the scenario models:

- The VIMS model does not predict attainment of the existing criteria under any scenario.
- The VIMS model predicts that the proposed criteria are attainable under all VAMWA scenarios.
- The chlorophyll reductions under the VAMWA B and B+ are quite different in the tidal fresh, indicating the sensitivity to TP reductions in this part of the estuary.
- The reductions under the VAMWA B/D and D are similar, despite the different loadings.
- With the exception of VAMWA B, the VAMWA scenarios and the the CBPO's WIP2 scenario produce similar results.

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Discussion

EPA Region 3 had questions regarding the proposed criteria's allowable frequency of exceedance. They stated the information and data shared to date gave much consideration to the assessment period and methodology to be associated with the criteria, however, the frequency of exceedance is a component of water quality criteria, and the criteria must be protective of designated uses.

DEQ: DEQ explained that the nature of chlorophyll justifies an allowable frequency that isn't exactly like the one used for toxic pollutants; however, DEQ did remind the audience that it's proposed frequency for the seasonal mean criteria is not very different from the frequency rule used for toxics. DEQ indicated that it was prepared to discuss the proposed frequency rule on a call with Region III to be held after the RAP meeting.

Joe W. – Question regarding whether the spatial aspect of the criteria and assessment methodology sort of 'wash out' HAB events?

DEQ: The magnitude of the proposed criteria reflect the spatial aspect of protection so that it no longer has to be an element of the frequency or assessment methodology.

Grace L. – Asked if there was agency policy or guidance for data value rounding and for sample frequency. She encouraged specificity and transparency. She also asked if DEQ could use data generated by City of Richmond.

DEQ – The procedure for rounding of data values and for sampling protocols (including frequency) would be handled in assessment guidance. DEQ can use externally generated data as long as it meets specific quality assurance/quality control requirements. James Beckley is the DEQ contact for the submittal of non-agency datasets.

John Kennedy asked the RAP to recognize that while the model results indicate that the proposed chlorophyll criteria may be met under the existing permitted requirements of the point sources under the reissued 2017 Watershed General Permit for Nutrient Discharges:

1. Attainment for that level of treatment is right on the cusp of compliance, and
2. It assumes that the WIP II level-of-effort for nonpoint source controls is fully implemented, which may actually be an unrealistic scenario.

Joe W. – Would it be possible to have a continuous model scenario continuum?

Lew L. – Stated that slides 19, 25, and 26 of Dr. Robertson's presentation tell the whole story regarding load reductions and their effect on modeled outputs.

Several questions were then posed about the next steps in the rulemaking process and the schedule for presenting final recommended criteria to the State Water Control Board and ultimately EPA. The proposal is currently going through Executive Review, following SWCB approved the Notice of Public Comment at their 9/20/2018 meeting. Once the NOPC is issued, there will be a 60-day comment period with at least one hearing. Staff then has 180 days to come back to the SWCB with final recommendations for adoption, and then another Executive Review will occur before submittal to EPA for review and approval. The proposed criteria amendments do not become effective until EPA approval.

Once the public comment period begins on the James River chlorophyll criteria regulation amendments, a NOIRA will be issued on the Watershed General Planning regulation, which may then potentially lead to modifications of individual WLA's for the James River.

The meeting was then adjourned shortly after 12:00 PM.